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**Transmittal Cover Sheet**

**Company:** United States Patent and Trademark Office

**Attn:** Examiner D. Flores Ruiz

**Fax Number** 1-703-308-7722

**Phone Number**

**FROM** Deborah M. Meredith,  
Assistant to Charles Berman

**File Number** 58062-011500

**Comments** Please find attached:

1. Amendment Transmittal
2. Amendment

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## PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Coldren *et al* Examiner: Flores Ruiz, D. *#7/Amata*  
 Serial No. 09/935,012 Group Art Unit: 2828 *afm*  
 Filed: 08/21/2001 Docket No. 58027-011500 *2/26/0*  
 Title: DISTRIBUTED BRAGG REFLECTORS INCORPORATING Sb MATERIAL  
 FOR LONG-WAVELENGTH VERTICAL CAVITY SURFACE EMITTING  
 LASERS

## CERTIFICATE UNDER 37 CFR 1.6(d)

I hereby certify that this correspondence and identified enclosures are being transmitted via facsimile only to Examiner Delma R. Flores Ruiz, Art Unit 2828, Facsimile No. 703-308-7722, on February 14, 2003.

*Deborah M. Meredith*  
 Deborah M. Meredith

AMENDMENT

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BOX: PATENT APPLICATION  
 Commissioner for Patents  
 Washington, D.C. 20231

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Sir/Madam:

Responsive to the Office Action mailed November 18, 2002, kindly enter the following amendments:

IN THE SPECIFICATION

Please replace paragraph 44 with the following paragraph:

[0044] FIG. 7 is a schematic representation of another aspect of the present invention, in which an electrically-pumped, Sb-based vertical-cavity laser 30 operating at 1.55  $\mu\text{m}$  is produced in a single epitaxial growth. The laser 30 employs AlGaAsSb DBRs 32 and 34 and an AlInGaAs-based active region 36, and has a room temperature threshold current density of 1.4  $\text{kA}/\text{cm}^2$  and an external quantum efficiency of 18%. The DBRs 28 and 30 employ a plurality of layers of semiconductor material, each alternating layer having the material composition of AlGaAsSb. In another embodiment, the DBRs 32 [28] and 34 [30] have a plurality of layers of semiconductor material, only one of which includes the element antimony (Sb). 36.00 CH